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*Stochastic Particle Dynamics for Unresolved Degrees of Freedom*

One of the recently established stochastic models for unresolved simulations is provided by Dissipative Particle Dynamics (DPD). The DPD model relies on a Markovian approximation and a white noise representation of the unresolved degrees of freedom. In my talk I will put the DPD model into the wider context of non-Markovian generalized Langevin equations which will lead us to an extended DPD model. Numerical implementations and applications to geophysical fluid dynamics will be discussed.